1:Beaglehole and Beaglehole E-5 (1934-5)1938 Pukapukans

sharp, long-spined porcupine); *tala pu mutumutu* (a short-spined porcupine); and *uluulu akau* (a small, bluish-spined porcupine). If a fisherman steps on the *kalamea*, a sharp-spined starfish, when walking on the reef, his foot is stuck full of spines. He turns over the *kalamea*, places his foot on the suction pads of the creature, and allows it to suck out the spines from his foot. Five varieties of bêche-de-mer are: *matua kalou, louili kula, louili uli, louili akau,* and *louili taupulepule,* which live under the sand. *Unukoa* is a mollusk that lives in a tapering tunnel in the coral. If stepped on, its poisonous shell produces terrible sores in the foot. The shellfish *valuyi* (*Nerita polita*) found on beach or reef, is used as a head for the water bottle scraper, also called *valuyi*. If a man found a jellyfish (*kalukalu moana* and *ngako*) on the reef, he took it home, carefully sun-dried it, and hung it up to the rafters inside the house, for it was believed to have been sent by the god of the paternal lineage and was taken as a sign of the god's good favor. Two varieties of sea centipede are *molokau tai* and *valou*. Only the *valou* are caught and eaten. To obtain them a noose is made in a piece of two-ply twisted sennit and held over the entrance of the sea centipede's hole. Chum of any kind is placed in and around the hole. When the *valou* comes from the hole to get the chum, the noose is drawn tight. Another method is to spear the *valou* through the head as it comes forth to get the chum.

CRABS

Three varieties of crab (generic name *tupua*) are caught on the outer beaches on certain nights of the moon and two stages are distinguished in the monthly growth of the three varieties:

Kaipea are caught on the thirteenth and fourteenth nights; *tupa*, on the fifteenth and sixteenth nights; and *kavea* (robber crab) on the seventeenth and eighteenth nights. During these nights the crabs move from the bush to the sea to wash and change their shells. On other nights of the moon crabs for bait can be obtained inland with more difficulty. On the evening before a man plans a fishing expedition, his children go out with torches after dark, hunting around trees in the bush and in holes. The crabs are put into a basket and kept until ready for use. Enough crabs for one or two weeks' fishing may be collected at one time.

In the first stage of growth (*tama te tupua*) during the new and full moon the crab is filled with fat much esteemed as a food delicacy. In the second stage (*pupu te tupua*) the fat has turned into yellow masses of eggs that are bursting from the abdomen of the animal. Crabs are not eaten at this time because neither eggs nor fat are considered tasty. *Kavea* is protected at the present time by a general agreement (*pulenga*) because it is thought to be dying out. Only large *kavea* are killed; young ones caught accidentally are freed. Robber crabs in the reserves are kept as reserve food supplies and are caught only by arrangement by the people of the village. This communal catching and distribution of crabs among the people of the village (*kavaya kavea*) enable all the people of the village to share in the food delicacy. If *kavea* were not reserved (*wakaya*), children and active young people would hunt them all the time, and the older people might not receive their fair share.

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and then allowed to lie about until they are needed as waste cloth. The soiled sleeping mats of adults may never be used by children, lest they be made sick by contact with the stains. There is no other precaution adopted about sleeping mats or sitting mats; these are used by members of the household or visitors.

GHOSTS

The fear of ghosts (*aitu*, old term; *yitolo*, modern term) is all-pervading in Pukapuka. Not only children, who are brought up with a fear of ghosts, but adults also are thoroughly afraid of them and their power. Children are never left alone in the night lest ghosts worry them. In times of sickness, ghosts are supposed to be particularly troublesome, and it is necessary at these times to be especially careful of the well-being of ailing children, who are not left unguarded even during the day. Ghosts are believed to cause sickness.

SICKNESS AND HYGIENE

IDEOLOGY

The Pukapukan had no conception of the physical causation of sickness or physical disability, unrelated to immoral, sacrilegious, or antisocial behavior of the afflicted individual or his relatives. Sickness was sent by gods or by malicious spirits (*aitu*), in order to punish or revenge the breaking of a tapu, or other antisocial behavior. Punishment by sickness was considered perfectly just, even though the sick person had himself committed no infraction of tapu; all the members of the guilty one's family or household group were jointly responsible.

Types of antisocial behavior punished by sickness were infractions of the following: economic tapus, through non-observance or stealing; rules governing the disposal of property at death or general economic contracts; rules governing the treatment of wife, children, relatives, and old people; sexual tapus, committing of incest, adultery; obligations based on kinship or friendship relations; and tapus on religious or ceremonial objects and structures. Deaths caused by suicide or homicide, or resulting from injuries received in homicidal encounters were the only ones for which a material cause, unaffected by spiritual interference, was recognized. Even here, however, a closer analysis would probably show that death or injury was due to the withdrawal of protection by the god from one of his worshipers because the worshiper had at some time violated rules.

Sickness in general was *mari atua* (god-sent sickness). Special names for types of sickness sent by gods, were: *maki kai kiko*, sickness caused by incest; *maki atua kino*, sickness caused by ancestral spirits. No single word applies to accidental injury, which is given a descriptive term, as *maki no te youvnga o te atua ki lalo*, sickness resulting from a fall from a tree caused by a god.

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the thumb on the vein and then with deep pressure, moving it slowly along the vein outward. Both movements are applied in all types of sickness, on all parts of the body, for every type of pain. Even in inflammation of the breast in a nursing mother, *lomilomi* is applied to relieve congestion or allay pain. Only the inexperienced person indulges in general rubbing movements over the whole body and on places remote from the source of pain. Massage, in the conventional sense, is never used by the expert medicine man, who concentrates on deep pressure over the seat of pain. There is no use of chanting either to assist the rhythm of pressure or magically to increase the efficacy of the technique.

Deep pressure and thumb movement are further applied for the relief of pain as follows:

Strains and sprains. The limb is explored with the fingers to determine the part of greatest swelling; deep pressure is then applied to this spot while the patient moves the limb at frequent intervals.

Pain in the middle of the forearm. Deep pressure is applied to the blood vessel in the upper arm; then the thumb is pressed along the pain artery in the forearm, from the proximal to the distal portion of the limb, thus rubbing the sickness to the fingers, and ultimately from the fingers into the air. An added treatment is the application of a suitable medicine to the wrist and then pressing toward the wrist in such a way that the sickness is conveyed to the wrist and there absorbed by the medicinal application.

Short breath (*ao potopoto*): Shortness of breath resulting from overwork is diagnosed as due to violent pounding of the heart. Deep pressure is applied to the right top and left top of the abdominal cavity. This is believed to relieve breath tension, but no effect on the blood flow is recognized.

Headache (*tinga te uhi*). Deep pressure is applied to the nape of the neck (the effect being presumably to paralyze the nerve centers in this part of the body).

Constipation (*tutai pukapuka*) and diarrhea (*totopi*). Deep pressure is applied to the colon (in the one case to relieve strangulation, in the other to assist the process of adjustment).

Stomach pain (*tinga te ruruvae*) including mild appendicitis. Deep pressure is applied to the part of the abdomen affected.

Filarial swellings (*mahi kinokino*). For swellings of the foreleg, for example, deep pressure is applied to the thigh and is followed by thumb *wakatele*.

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Formerly, a medicine man might perform the pigeon-sounding ritual (*lupa*) before beginning the *lomilomi* and at frequent intervals during the course of the treatment, with the idea of introducing the power of the god into his fingers and of retaining it during the treatment. This method was not common; its use depended on the personal choice of the medicine man and on the severity of the sickness. When he did this, bystanders would say: "Ka yopukia e te atua i te lima" (The god will seize the hand).

Broken and dislocated bones are treated by empirical means, supported formerly by communication with the god if complications set in. A fractured bone is *isi wati*; to set a fracture is *wakatou*. The technique was illustrated by Pau only for a broken forearm, a dislocated elbow, and a dislocated jaw, though undoubtedly he has a reasonably good technique for dealing with every type of limb dislocation or breakage:

The medicine man grasps the broken limb with his two hands, the two thumbs on opposite sides of the upper part of the limb, the fingers of both hands holding the limb

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below the fracture. The fingers pull apart the lower part of the bone, firmly and surely, while the two thumbs press (*yoke*) the two broken sections so that they fit firmly together. Then the downward pressure is relaxed and the broken sections pushed together. A cooling medicine (*tui lakau*) is applied to the broken section, coconut sheaths are placed on both sides of the limb to act as a splint (*lakau makeyako*, stick to make straight), and the whole bound up with sennit. To prevent movement, the arm is slung in a simple sling (*avu*) made of a piece of pandanus mat, an old malo, or a line of sennit which is passed under the arm and fastened over the shoulder. For sleeping, the arm is removed from the splint and rested on a pile of mats at the patient's side. Every two or three days fresh medicine and new splints are applied to the fracture. There was no disease object to be removed from such an injury, though the god was believed to have caused the slip which resulted in the fracture. Native doctors are expert at setting fractures; the limb apparently always knits well.

For an injury to the elbow (presumably a dislocation), termed *uenonga taka* (section out of position), the arm is straightened out, the forearm pulled steadily in a distal direction, the joint pushed in with a steady pressure of the two thumbs and guided back into place. For a similar injury to the jaw, the thumb is pressed in on the angle of the jaw. The mouth of the patient is opened wide until the knuckles of the jaw joint are close in position. Then with a firm pressure of the thumb, the bones are mapped back.

The three cooling medicines used are: drinking nut liquid; *lolo* cream wrung from raw or baked coconut scrapings; and the juice of pounded ripe bananas. The theory in the use of this medicine is that it purifies the blood round the injured part, keeps the fracture cool, allays inflammation, and thus promotes healing. A cooling medicine is applied only if there is much inflammation or pain. *Lomilomi* may be applied later if stiffness is apparent.

Besides *lomilomi*, other physical therapy techniques include sweating, sun and water treatment, and lancing. Forced sweating is used for fever only. Fever is *maki auukele*; sweat is *ta*; to sweat, *pupu te ta*. In cases of fever, the source of pain is treated with *lomilomi*. Drinking nuts are heated near a fire, and the patient is given the hot liquid to drink. He is also covered with several layers of mats to promote sweating. There is no known use of a sweat or steam bath to promote excessive perspiration.

General debility marked by pronounced weakness of the stomach and heaviness in the arms and legs was called *maki taeuuua* (heavy sickness). It was treated with frequent cold, fresh or salt water baths, the external application of hot coconut liquid, or occasional sun bathing. The god might recommend a cold bath for one patient and a hot bath for another; hence it was impossible to establish general uses of these agents. To heat water the tops of green drinking nuts are split, the coconut liquid poured off, and the nuts filled with cold water are placed on hot coals. When the water is hot, it is poured into a wooden bowl. It is then laved over the patient with cupped hands.

Pukapukan surgery seems to have been backward in its development. The only record or knowledge of post mortem examination is in the stories of Watu-manava-nui and Uyo. The dead bodies of these two supermen were opened up after death in order to find out the cause of their exceptional physical abilities. The gods seem not to have suggested to the medicine men

752 any method of removing disease objects by opening up the body. Nothing is known of amputation surgery, nor is there special treatment for shattered or gangrenous bone.

752 In the case of suppurating flesh, boils, or ulcers, the infected part is opened with a lance (*pao*) of shark tooth, and the blood and pus allowed
751 to drain off. To remove the bad blood in filarial swellings, the skin is pierced and the liquid drained off into a coconut shell. The same limb is lanced on successive occasions until the swelling subsides. Today a nail or a piece of glass is considered more efficient than a shark tooth. In lancing ulcers or boils (*kiko papala*) no attempt is made to keep the incision open so as to drain off the pus (*pe*). The hole closes naturally and is reopened after a few days. Nothing is known of trephining, nor is there ever intentional opening of vein or artery for bloodletting. Cautery was unknown. In effect, Pukapukan surgery is extremely undeveloped as compared with another western Polynesian community such as Vaitupu (19, pp. 236-246).

The Pukapukans had little knowledge of dental surgery. They practiced extracting only when a tooth was loose enough to be removed easily with the
751 hand. Toothache (*tinga te nio*) is common today; a favorite remedy is the application of salt or the insertion of a piece of plug tobacco in the cavity. Formerly, the mouth was rinsed out with salt water at frequent intervals, or the cavity filled with a piece of coconut fiber soaked in salt water. Two other remedies are: pound up the leaf buds of the *puka* tree and add to them fresh water or drinking nut liquid; soak a piece of coconut stipule (*kaha*) in the liquid, and pack the material round the affected tooth and gum. Alternately, pound up a segment of the stalk of the banana tree and then tease out the fibers to make a flat surface, apply this to the tooth and gum. Foreign particles stuck between the teeth are picked out with a section of coconut leaflet midrib (*yukiyuki na nio hi te tuamiu*).

For earache, the meatus is explored with a bird quill or a chicken feather (*yokayoka hi te wulu manu*) in an effort to dislodge excessive wax. Specks in the eye (*matu pepe*) are removed by a second person who turns down the lid and blows into the eye. If a cramped foot falls asleep or is affected by pins and needles (*vae matakelekeles*) small stones are inserted between each toe and left there until relief is obtained. Cramps in the hand or arm are relieved by cracking and snapping the knuckles of the fingers (*makimaki na mangamanga lima*).

752 The following texts are records of the powers of two men who combined
791 the offices of medicine men, priests, and seers, and who appear to have been particularly skillful in the treatment of some of the disorders just mentioned:

793 1. Tamasi was a Motiwatu man. He was a seer, a man with special powers. These
713 were the things he saw: medium-sized fish; when he clapped his hands, the hand was filled with the medium-sized fish. He clapped his hands, saw all the properties of the